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THE INDUSTRIAL ESTATE : SOCIAL TECHNOLOGY FOR ECONOMIC DEVELOPMENT

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THE INDUSTRIAL ESTATE - SOCIAL TECHNOLOGY FOR ECONOMIC DEVELOPMENT

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1. Many countries are faced today with the urgent problem of industrializing expeditiously and with a sense of orderliness. The capacities of governments are taxed in finding suitable means of attaining this aim. Certain institutional devices have been used successfully to deal with the intricacies of initiating and sustaining industrial development and growth, especially as regards small and medium scale industry.

2. The industrial estate is one among several effective devices for fostering new entrepreneurship and orderly industrial expansion. It is a focal device around which other institutional means of supporting industry may be effectively deployed. Leaders in less developed countries are increasingly aware of the possibility of using industrial estates to give direction to the small and medium scale industrial sector.

Definition of an Industrial Estate

3. The industrial estate is a planned approach to the establishment of a viable cluster of industrial enterprises. The tract of land developed for the purpose must provide for the basic elements of the internal physical infrastructure, including construction of streets and roads, the installation of water, power and sanitation utilities, and the provision of transportation facilities. A comprehensive layout plan should provide for the location of all components of this infrastructure and the design of lots for the establishment of factories, parking space, and landscaping. Factory buildings may be provided also as a complete package of industrial facilities, or there may be special financial arrangements and technical assistance for factory construction.

4. An essential provision for a high quality industrial estate is sufficient future control of the developed site through such means as industrial zoning, incorporation of legal restrictions in deeds of sale or leases, and arrangements for long-term management--all with a view toward protecting the investments of the developer and the tenants.

Brief Historical Sketch

5. Industrial estates have been used with increasing success since the Second World War for promoting orderly industrialization in advanced as well as developing countries. The concept of the modern industrial estate originated in the United Kingdom and the United States less than 70 years ago. The first positive attempt to use industrial estates for industrialization objectives was the initiation of a large construction program by the United Kingdom as a means of diversifying industry in the "depressed areas" during the thirties. Large scale adoption of the industrial estate concept in the United States was stimulated by the tremendous upsurge of industry, including the establishment of many branch plants, during and since the Second World War. Today over 1,000 are in operation.

6. The British experience influenced the founding of the program in India, where today over 100 projects have been established with the specific objective of dispersing industry. In "Operation Bootstrap" of Puerto Rico, the industrial district concept of the United States mainland was adopted to achieve the twin objectives of *attracting industry and achieving* decentralization. There is a general and rapidly growing interest in the adoption of industrial estates. The many factors favoring the dispersal of industries in the developing countries are bound to exert a strong influence in the use of this method of economic decentralization.

7. Historically a broad range of goods have been successfully produced on industrial estates. These have included producers' and consumers' goods with the latter predominant. The mechanical and engineering industries appear in the core of emphasis in developing countries. In more industrialized countries the sophistication of markets and skills is evident, as in the electronics industry. Generally, industry is of the light and medium type, mobile with respect to markets, producing goods of fairly high value and moderate bulk.

8. In the earlier stages of industrial development, when entrepreneurship is still comparatively limited, it may be necessary for government agencies to demonstrate the effectiveness of the industrial estate concept to potential private developers. Among the obvious advantages in having private enterprise take the initiative as early as the capability can be created are the opportunities for decentralizing decision-making and mobilizing private investment capital.

9. In the United States, the typical planned industrial district, until recent years, tended to exclude ready-built factories, whereas in Great Britain and India, factory buildings are a standard provision. In addition, in India, certain special industrial and technical services are furnished to improve the productivity of tenant enterprises. Much of the success of the Puerto Rican industrial subdivisions may be attributed to the fact that factories are ready for industrialists to move in with their machinery and labor force and to begin operations.

Economics of the Industrial Estate

10. While experience with industrial estates indicates that plants of all sizes are likely to benefit from locating in such projects, the benefits appear to be greatest and most obvious for small and medium scale enterprises. The big industrial enterprise, which characteristically has comparatively large resources of finance and skilled administration at its command, can provide itself with many of the tangible and intangible elements that a small enterprise can obtain only as a member of an aggregation of firms. The economic benefits of industrial estates arise to an important degree from the following considerations:

(a) The economies of scale obtained from the overall construction, planning, and development of the project.

(b) The external economies derived from the physical infrastructure and the clustering of industrial enterprise.

(c) The economic feasibility of providing certain services and conveniences resulting from an aggregation of a sufficiently large number of firms.

(d) The benefits from a reduction of risk to the individual firm and the sponsoring authority arising from the clustering of firms.

11. Large economies of scale can be obtained from developing an industrial estate to provide facilities for a group of industrial enterprises. The major immediate benefits to individual industrialists are derived from:

(a) The assembly of land into suitable and well-located industrial sites.

(b) The construction of streets and access roads.

(c) The installation of power, water and waste disposal systems and other utilities.

(d) The easy financing of construction, particularly if factory buildings are included.

(e) The reduction in the time required to complete preparations for beginning industrial production.

12. These contributions significantly reduce the cost and promote the ease of getting into business. Industrialists benefit from the external economies which arise from association with a group of firms and from the impact on the community of an aggregation of industrial enterprises. Such benefits include the spread of technical know-how and skills among workers and management, mutual inspiration, a pool of industrial labor, and the stimulation of many kinds of entrepreneurship. The market becomes large enough also to support certain industrial services, such as common industrial facility centers and industrial advisory services. Some services may be provided by private enterprise to take advantage of the ready-made market. The concentration of industries makes it possible to establish substantial overhead facilities, some requiring heavy capital investments, such as railway and port installations or the extension of a highway system. Many services of benefit to employees and businesses, such as improved bus transportation, become feasible due to economies from the clustering of industry. In some cases, where the industrial estate is fairly large it may be advantageous to locate industrial training facilities close by.

13. An industrial estate provides the essential element of orderliness in the growth of an urban community by locating firms together in an industrial zone. It has the good effect through proper selection of industry of protecting residents from unpleasant industrial odors, noises, dangers, and traffic congestion. In the absence of a zoned approach inherent in an industrial estate, industry tends to become interspersed with other businesses and private residences because it is less costly and more convenient for entrepreneurs.

A Tool of Industrialization

14. In view of the substantial private and social benefits that arise from the clustering of industry accomplished by an industrial estate, it may be used as a positive tool for directing the process of industrialization. It is a complicated mechanism of development, and its advantages and limitations need to be properly understood.

15. In view of the comparatively large investment required, each project should be examined carefully, especially where investment capital is in short supply. Application of the principle of opportunity costs in evaluating alternative industrial estate projects in different locations and investments in other development projects or devices is therefore of major importance. An industrial estate should achieve a net contribution to industrial development.

The Institutional Framework

16. To use industrial estates deliberately as a method of promoting industrialization, a strong institutinnal framework for planning, executing, and servicing projects is essential. It may be necessary to have a hierarchy of institutions--national, provincial, and local--designed to produce a calculated long-term effect on industrialization.

17. The program should view comprehensively the integrated development of small, medium, and large scale industry. This relationship must be conceived at the topmost national planning level. Coordination is required among agencies responsible for the development of large and small industry and those in charge of planning all infrastructural investments. National planning should provide for the creation of regional industrial complexes, of which industrial estates for small and medium scale industry may be components. Such planning would enable the agencies concerned with the development of industry and those responsible for the development of the infrastructure to move in step.

18. The agencies responsible for industrial estates should be administratively strong and adequately served by investigation and planning groups. In addition, strong auxiliary measures, devices, and institutions, may be required to serve industry, including industrial advisory services, community workshops and common facilities, demonstration centers, worker and executive training programs, productivity programs, development banks, installment purchasing and supervised credit systems, cooperatives and trade associations, and research facilities. A coordinated approach using such measures simultaneously with an industrial estates program is likely to produce the best results.

Rationale for Industrial Decentralization

19. To provide the setting for industrial estates as a measure for promoting regional development, it may be worthwhile to examine the rationale of industrial decentralization. In many countries today, the fostering of industry in less developed regions is recognized as a necessary policy for political and social reasons, and governments frequently undertake decentralization even at the risk of considerable economic loss.

20. The process of economic development often accentuates existing regional disparities in income levels and job opportunities, unless positive steps are taken to modify such tendencies. For different spatial patterns of economic activity, the proportion invested in the physical and social infrastructure as compared with the investment in industry and commerce will differ markedly. Each pattern has its own special impact on the generation of further industrial growth, as well as unquantifiable social benefits and costs.

21. The comparative economics of alternative geographic patterns of development is not sufficiently understood to arrive at clear-cut conclusions. However, one might postulate a strong presumption that a country may be developed more rapidly and more economically with a decentralized pattern which makes good use of regionally distributed natural and human resources. To obtain a satisfactory development of resources and human skills, and to sustain the forces favoring democracy and political stability, it is being increasingly recognized that greater industrial decentralization should be encouraged. Where population is increasing rapidly, decentralization of economic activity should reduce the heavy migration of population from rural areas to metropolitan centers, and the economic and social costs inherent in this general phenomenon of economic development.

22. The most effective way of deliberately affecting the geographical distribution of the population is to use industry for decentralizing economic activity. The decentralization of the industrial pattern must be based upon an extension of the infrastructural system: transportation, communications, power, and water supply systems. Population will follow the redistributed industrial pattern.

The Strategy of Industrial Decentralization

23. In economic development, insufficient consideration has been given to developing regional economic complexes and to use industrial estates as components to contribute

economic viability and strength. Such complexes may be based on a nucleus of extractive industries, on the expansion or creation of seaports, inland transportation nodes, and the proximity of markets.

24. The growth possibilities of a regional industrial estate or industrial complex are greatly strengthened by branch plants of well-established large and medium scale firms from more developed urban centers. They are probably the most viable form of investment from outside, as they bring the financial and technical capacity of the parent enterprise to the new development area. Frequently they also create economic interdependence among the small and larger firms on the estate.

25. It is possible to conceive of a hierarchy of industrial estates--related to the size and industrial potential of communities--and built strategically throughout a country to maximize their economic effect. This suggests phased penetration of less developed regions on a long-term basis, say, over a five to fifteen year period.

26. The establishment of industrial complexes in the interior far from adequate transportation and utility services should be considered feasible only if there is sufficient basis for a complex of substantial scale, in view of the extensive investment required in extending the physical infrastructure to the site. Large industrial complexes make it feasible to construct the essential access roads and highway system, communication system, water and power supply and distribution systems, and sewage and drainage facilities. In addition, there is the need for residential housing projects and the social amenities provided by schools, hospitals, restaurants, hotels, and places of worship required by an integrated community.

27. A key problem in regional industrial development strategy is to establish the criteria for deciding on the rate at which industrial decentralization should be pushed. Clearly priorities will come into question as investment capital will need to be rationed for industrial development. Choices to some degree will need to be made on a locational basis.

28. The first principle in planning an industrial estate would seem to be to obtain the greatest impact in employment opportunities and dynamic growth. Secondly, it is necessary to take into account the incremental investment required in the infrastructure (particularly transportation, communications, and amenities) which is an essential and concomitant part of the overall investment.

29. The desire to assist the less developed smaller urban centers conflicts with the fact that the infrastructure essential for rapid industrial growth may be inadequate in such communities. The external economies so essential for attracting and supporting industry may not be sufficiently developed and the chances of commercial failure are much higher. Success is more likely where industry already exists; its existence indicates that external economies may be satisfactory, and that there are prospects of dynamic growth.

30. Cities with a good growth potential need to be identified for locating industrial estates. The growth rate and the ratio of industrial entrepreneurship with respect to the population is a good indication of the dynamics of growth. Large metropolitan centers with strong growth potential probably need no special assistance. On the other hand, in a whole range of cities extending down to 50,000 or less industrial estates can pay off well.

31. After a strong impetus has been given to cities in the 100,000-to-300,000 population range, it may be feasible to move on to a second tier of smaller cities and towns, ranging perhaps between 50,000 and 100,000 in population. Consolidation around the centers of strong potential should be pursued by the integration of smaller satellite cities and towns, and perhaps even large villages. Investments in very

small centers may be justified only when no larger centers with good potential exist in very underdeveloped regions.

The Size and Phasing of Projects

32. One may conceive of a wide range in the scale of industrial estate projects, with the smallest "rural" estate being perhaps one or two hectares. The scale of the project must bear some relationship to the size of the urban center and its potential for growth.

33. The amount of industrial space provided on the estate should be related to the demand anticipated over a period of years. A survey should determine the number of industrial enterprises in the community, some measure of the industrialists interested in moving to the estate, an indication of the proportion of industrialists that might be suitable candidates, an estimate of the number of new firms that might grow up in the coming years, and finally, an estimate of the number of firms that might be expected to migrate into the area. To determine actual space estimates, information is necessary on the probable size of firms and on per worker industrial space requirements.

34. Having a knowledge of anticipated demand for space, it is possible to outline a program of construction by phases, with each phase planned to keep ahead of the anticipated demand for ground space. Phased development is the most effective way of preventing over-investment in roads, factory buildings, and common utilities.

Modernization Assistance to Occupants

35. The effectiveness of the various means of assisting small and medium scale industry can be extended if intimately related to an industrial estates program. Among these, much effort should go into providing more technical know-how for the less capable industrialists. Merely to use the estate as a means of subsidizing inefficient small industrial firms is not sufficient justification, unless the means are at hand to assist the small industrialist to improve productivity in the process. In fact, the objective of modernization must begin with the selection of industrialists who have the inclination and capability to modernize and have shown a tendency to do so in their previous history.

36. Usually, it will be necessary to provide technical advice on the selection of modern machinery, for developing the plant layout, for satisfactorily installing the machinery, and for putting the plant successfully into operation. Such assistance may offer one of the most effective means of improving working conditions by providing sufficient work space to permit increases in labor productivity. On the larger industrial estates it may be feasible to have a technical group which can render assistance to a large industrial community. Lack of a properly qualified technical assistance service at the disposal of an industrial ministry of government could be a real bottleneck in executing a successful industrial estates program in an underdeveloped area.

Factory Construction Policy

37. Important problems are whether factories should be provided in advance of demand, and the financial terms and arrangements on which buildings should be made available.

38. Evidence supports a policy of constructing factories of a few standardized types, as these can meet perhaps 90 percent of the requirements of small and medium scale industry. Standardization of design has the important advantage of permitting economical construction, of obtaining acceptability from most industrialists, and of ensuring reoccupation in the event a tenant leaves.

39. Construction of some factories by the sponsor of the estate sets the tone for the types of buildings preferred and a standard which private builders may follow.

40. There are generally advantages in permitting industrialists some choices: whether to build their own factories, having the development agency construct factories to their specifications at cost, or leasing ready-built factories. They should probably have the choice of buying factories outright, buying them on installments, or renting them on a long-term basis. From the sponsor's point of view, the sale of buildings provides an effective means of drawing private capital into the project. Of course, policy must be flexible so as not to force small industrialists to sink capital into fixed assets instead of using it for operations. Buying of factories permits the creation of a revolving fund for reinvestment in phased expansion or in new projects.

Industrial Land Policy

41. Many privately financed industrial estates have been financed on a phased basis with funds obtained from the sale of developed lots. There is an increasing tendency in the United States today for developers of industrial estates to provide factories also for sale on a long-term installment basis. Control over future development is maintained through the agreement of sale and possibly through covenants which establish conditions of occupancy.

42. In India, the land, and the buildings on industrial estates, practically without exception, are rented to industrial occupants. Under the British program, land is made available to the industrial estate development authority on a 99-year lease. Ownership of the land never passes to the industrial occupants, although the factories may be sold or rented.

43. In less developed countries, where population density is high and it is difficult to acquire land, there may be good reasons for the government to retain land ownership. The community can thus capture the capital gains from rising land values that have accrued from the growth of the community. On the other hand, the incremental gain from the rise in industrial property values enhances the capital available to industrialists for further expansion.

Research for Planning Industrial Estates

44. Every industrial estate requires a feasibility study to evaluate the project from economic and engineering points of view, including the goals of the industrial estate program, and the anticipated contributions to the overall economy. Most of the limitations of industrial estates are the consequence of improper planning. The danger is that over enthusiastic expectations unbuttressed by the facts needed for making good plans may result in highly expensive industrial monuments which would divert resources from more productive investments. The overriding aim should be to establish firms in a position to be competitively viable. Therefore the location and the design of all aspects of the project need the most careful attention.

45. There is a need to decide on the regional location. There should be an evaluation of alternative sites within the urban area and the environs where the project is to be established, from the standpoint of cost, access to transportation, availability of raw materials and markets, adequacy of water and power supplies, community facilities, and the like.

46. Reference has been made to the selection of the city on the basis of its potential. There is also need for an evaluation of the probable impact of the investment on the growth of the community; and alternative centers need to be compared if a choice is to be made between communities. The choice may be affected by the type of industry it is desired to promote within the framework of a national development plan.

A survey of the industry of the area is probably essential for understanding the industrial structure, the kind of industry which may locate on the project, the state of the technological art, and what steps need to be taken for modernizations.

47. Information on space utilization in the industry is essential so that proper planning may be done and production conditions improved. Knowledge of the capital invested in land, buildings, and machinery is required to get some idea of the financial accomodations needed by industry.

48. For planning, it is desirable to know whether factory buildings are generally owned or rented. It is essential to determine if the potential tenants now located in slums or elsewhere will have the capacity to pay the purchase price or rent necessary to reimburse the development cost of the project, and the terms that industrial tenants will be able to meet. A study of the rent-paying capacity of tenants will indicate whether a project can be constructed and facilities made available on a competitive basis with industry in established industrial areas. This kind of information is invaluable for properly designing the layout of basic installations and in planning a flexible approach in the provision of facilities. In recent studies it has been shown possible to provide new factory buildings on a modern estate to cover the economic rent at rentals now being paid in nearby slum areas. Studies have shown that projects can be established on a viable basis without subsidization if physical facilities are carefully designed and policies are tailored to meet the special requirements of industrialists.

49. It is important to determine what proportion of the lots on the estate may be covered by factory space for production and storage purposes. Projects must be designed consistent with community ordinances. In some cases, amendments may be essential to introduce orderliness and to improve space utilization in the factory and in the community at large. A knowledge of existing space utilization is necessary as a basis for suggesting reasonable improvements and standards in the arrangements of space in the new estates. Setbacks and space for car parking must be adequate. By these devices it is possible to have the industrial estate add a pleasing appearance to the community and improve the conditions under which people work. It is evident, that the provision of a park-like atmosphere introduces some extra costs; therefore, some compromise is necessary between overall efficiency in the utilization of space and the provision of pleasant and convenient conditions for the operation of industry.

The Use of Industrial Estates in Foreign Investment

50. There would appear to be an opportunity to use industrial estates as a mechanism of industrial development in connection with private foreign investment and in rendering foreign economic assistance to less developed countries. The successful establishment of several excellent industrial estates in Canada by certain British firms, for example, demonstrates the possibility in the field of private foreign investment. Under the foreign economic assistance program of the United States Government to the developing countries, several pilot industrial estates are being established as demonstration projects. Foreign exchange is made available in some instances for imported machinery required by small scale industrialists established on such projects. The International Development Association (affiliate of the International Bank for Reconstruction and Development) is considering low interest loans on several projects in less-developed areas. These efforts toward using industrial estates for facilitating foreign investment in promoting industrial growth are clearly still meager, but the advantages that exist provide cause for some optimism.

51. Through the clustering of industry the industrial estate makes it feasible to invest from abroad in small and medium-sized enterprises by the reduction achieved in the administrative burden involved in larger scale equity or lending operations. The risks can be spread among many enterprises. They can be reduced further by ensuring that adequate technical assistance and superior management are built into each

project. Thus, the administrative costs involving the transfer of a large block of capital (usually the case in international loans and investments) are greatly reduced. Finally, it permits real control over the inherent economic risks by introducing necessary technical and managerial assistance.

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